

view thereof, the Examiner is requested to reconsider and withdraw the Section 102(a) and Section 103(a) rejection.

The applicants' comments below are directed essentially to the novelty and unobviousness of the applicants' main claim (claim 1) as all of the applicants' other claims depend, directly or indirectly, from claim 1 and it is felt that the distinctions noted as between applicants' claim 1 and the Holdcroft disclosure should be sufficient to warrant allowance of all of the claims. Features of at least some of the dependent claims are thought to be separately patentable over Holdcroft. However, since the applicants' position with regard to the novelty and unobviousness of the invention as defined in claim 1 should be dispositive of the Examiner's rejections, in the applicants' view, it is believed sufficient to centre the applicants' comments on the deficiencies of Holdcroft with respect to claim 1.

For possible ease of reference, it is noted that applicants' claim 1 reads as follows:

1. (original): A method of forming an organic electronic device, which method comprises the steps of:
 - a) forming a negative image of a desired pattern on a substrate or layer of the device with a lift-off ink;
 - b) coating a first device layer to be patterned on top of the negative image;
 - c) coating one or more further device layers to be patterned on top of the first device layer to be patterned; and
 - d) removing the lift-off ink and unwanted portions of the device layers above it, thereby leaving the desired pattern of device layers.

Initially, it is noted that the Examiner has repeated the arguments set out in the initial Office Action of October 26, 2006 except for the parenthetical addition appearing at the end of ¶ 3 of the action, i.e. "(Please note that although this figure above addresses a process using positive tone processing, Holdcroft clearly teaches both negative and positive tone processing and therefore Applicants arguments are moot.)" However, with respect, it is submitted that the Examiner's dismissal of the applicants' comments is inappropriate. If claims are to be rejected as anticipated, the Examiner must show disclosure of each and every element of the claims at issue. The applicants have pointed out in detail how Holdcroft fails to disclose the

applicants' invention and, in the absence of clear-cut disclosure by Holdcroft of a method as claimed by the applicants, the rejection should be withdrawn.

The applicants note that the Examiner has not explained how the cited passages of the Holdcroft article anticipate the features of all the applicants' process steps a)-d). Thus, the Examiner did not address the applicants' argument that applicants' process steps b), c) and especially d) are neither explicitly or implicitly disclosed by Holdcroft. The Examiner refers to Figure 9 of Holdcroft as a basis for his rejection. However, Figure 9 does not show the formation of a negative image as required in applicants' step b), or its removal as in step d).

The Examiner has argued that Holdcroft teaches the applicants' method of claim 1 when considered "as an entire prior art rejection" and not "piecemeal" as he claims the applicants have done. However, with respect, it is submitted that it is the Examiner who has considered Holdcroft in piecemeal fashion, e.g. by picking single terms such as "negative tone resist" and "photoresist lift-off procedure" from the Holdcroft reference out of their context, and interpreting them incorrectly to somehow fit into the applicants' invention. It is because of this that the applicants have found it necessary to consider the Examiner's selective choice of terms from Holdcroft in some detail. However, the simple fact of the matter is that Holdcroft does not disclose the applicants' method as defined by claim 1.

The Examiner alleges that applicants' last response did not point out the patentable novelty of claim 1. However, in said response, the applicants clearly pointed out that Holdcroft does not disclose a negative image, and does not disclose steps b), c) and d) of the process called for in claim 1 and that, as a consequence, applicants' process is novel.

The characterizing feature of applicants' step a) is "forming a negative image of a desired pattern on a substrate with a lift-off ink". See applicants' Figure 4a), where layer 42 represents the lift-off ink that forms a negative image on substrate 41 (consisting of two covered areas on the left and right, and a central uncovered area). Said layer 42 is afterwards removed in step d). The applicants cannot find any passage in the Holdcroft article that discloses the step of "forming a negative image of a desired pattern on a substrate with a lift-off ink".

The characterizing feature of step b) of applicants' claim 1 is "coating a first device layer to be patterned on top of the negative image". See applicants' Figure 4b), where layer 43 represents the first device layer, which is then partially removed

in step d) together with the lift-off ink (see below). Figure 9 of Holdcroft does not disclose this feature because it does not show a negative image (i.e., which is afterwards removed), onto which a device layer could be coated. The device layers shown in Figure 9 of Holdcroft are not removed.

The characterizing feature of step c) of applicants' claim 1 is "coating one or more further device layers to be patterned on top of the first device layer". See applicants' Figure 4b) where layers 44 and 45 represent the further device layers, which are then partially removed in step d) together with the lift-off ink (see below). The applicants do not find any disclosure of such a process step in the Holdcroft article. Figure 9 of Holdcroft does not disclose this step because it does not show a negative image (i.e., which is afterwards removed), onto which further device layers could be coated. The further device layers shown in Figure 9 of Holdcroft are not removed.

The characterizing feature of applicants' step d) is "removing the lift-off ink and unwanted portions of the device layers above it, thereby leaving the desired pattern of device layers". See applicants' Figure 4c) where the lift-off ink layer 42 is removed, together with the portions of layers 43-45 above it, leaving the desired pattern of layers 43-45 (i.e. a central covered area and two uncovered areas on the left and right, which is a counterpattern of the negative image of layer 42 shown in Figure 4a). There is no disclosure of such a process step in the Holdcroft article. The device layers shown in Figure 9 of Holdcroft are not removed, not even partially.

A central point in the Examiner's argument is that Holdcroft would teach "negative tone resists" or "negative tone patterning/processing". However, the applicants do not claim "negative tone patterning/processing". Instead, they claim the formation of a "negative image". Holdcroft does not disclose or teach the formation of a negative image. The negative tone resist is not a negative image (as shown by the materials submitted with the applicants' last response).

The Examiner also argues that applicants' step a) is anticipated by the terms "negative tone resist" and "lift-off process", and then further argues that step b) is anticipated by Figure 9 although Figure 9 does not show either a tone resist or a lift-off process (i.e., where a layer is removed). As mentioned before, steps a)-d) of applicants' process have to be considered in combination with each other. Thus, the negative image formed by the lift-off ink in step a) is still present in steps b) and c), where further device layers are coated on top of it, and is then completely removed in

step d) together with those portions of the device layers covering it (i.e., the “unwanted portions”). Holdcroft does not disclose such a process.

The novelty in the applicants’ process is highlighted by applicants’ step d). This step clearly distinguishes the applicants’ process from any processes taught by Holdcroft, since Holdcroft does not teach a process step where unwanted parts of a device layer are removed together with an underlying layer of a lift-off ink.

The applicants attach a copy of the reference 53 (Tian et al., *Appl. Phys. Lett.*, 1997, page 3197 ff), which is cited on page 1758 of the Holdcroft article in connection with the “photoresist lift-off procedure”. Tian discloses a process of preparing an OLED device (see Figure 1 and accompanying text on page 3197, right column, last paragraph – page 3198, left column, first paragraph). The process comprises the steps of applying a photoresist layer on a substrate comprising polyimide and SiO₂ layers, and patterning the photoresist using a photomask, so that it covers only the polyimide and SiO₂ layers (see Figure 1a and page 3197), followed by applying functional layers, like OLED and metal caps (see Figures 1b and 1c), and finally lift-off of the photoresist mask (see Figure 1d). However, Tian does not disclose either the formation of a negative image or a lift-off process as in the applicants’ step d), where the lift-off ink is removed together with unwanted portions of the device layers, which had been coated on top of the lift-off ink in previous steps. Therefore, Tian, and consequently also its citation in the Holdcroft article, does not anticipate the process of applicants’ claim 1.

In conclusion, the applicants submit that the Holdcroft article teaches the use of a “negative tone resist” and “lift-off procedure” for the formation of electronic devices but does not anticipate a process as called for in applicants’ claim 1. Even if (for the sake of argument only), the applicants accepted “negative tone resist” as encompassing the formation of a negative image, the Holdcroft article would still not anticipate the applicants’ process because the reference does not disclose a process where a resist is coated with at least two further device layers (as in applicants’ steps b) and c)), and is then removed together with the unwanted portions of said device layers covering the resist. Therefore, the process of applicants’ claim 1 is clearly novel over Holdcroft.


In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw the Section 102(a) rejection of claims 1-6, 12-26 and 28-35 based on Holdcroft.

Additionally, the Examiner is requested to reconsider the Section 103(a) rejection of claims 7-11. The use of the features of claims 7-11 in the applicants' process as defined in claim 1, from which claims 7-11 depend, is not in any sense obvious from Holdcroft, particularly when considering the deficiencies of Holdcroft as noted above with respect to the Section 102(a) rejection.

Consistent with the foregoing, the applicants respectfully request the Examiner to reconsider the rejections of record and allow the applicants' claims. If the Examiner considers that issues still remain, he is requested to telephone the undersigned in an effort to resolve such issues.

Respectfully submitted,

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